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Empirical equation for preliminary assessment of soil texture

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Abstract

In this paper, for the first time type and texture of northern Serbian soils were examined using DRIFT spectroscopy. It was investigated whether it is possible to use the specular reflection of the quartz band for the purpose of the preliminary quantitative determination of texture properties. Investigation is conducted on the five most common soil types in Vojvodina: Arenosols, Fluvisols, Chernozems, Vertisols and Solonetz. Spectra were obtained using diffuse reflectance (DRIFT) technique in mid-IR. Spectral characteristics for five characteristic soil types in this region were determined. Certain regularities were observed regarding inorganic bands and main relations between these inorganic components and the texture parameters were determined. The empirical equation for the rough preliminary estimation of the soil texture was determined based on the absorbance values on the 2228 and 1211 cm^{-1} .

Keywords: Texture, Spectroscopy, Quartz, Inverted band, Reststrahlen

Highlights

- For the first time, DRIFT spectroscopic study of soils from Serbia was performed.
- Significant correlations between textural and spectral parameters were observed.
- Inverted quartz band was used for semi-quantitative determination.
- Empirical equation for preliminary estimation of soil texture was determined.

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